AMENDMENTS TO THE CLAIMS

1. (Previously Presented) The method of fabricating an optical device according to claim 11, said optical device being a phased array narrow band wavelength division multiplexer including closely spaced arrayed waveguides, a slab waveguide and a transition region between the arrayed waveguides and the slab waveguide, wherein said step of etching the transition region with a reactive ion etch results in forming vertically tapered regions between the arrayed waveguides in said transition region of said phased array narrow band wavelength division multiplexer.

2. (Original) The method of claim 1, wherein the reactive ion etch includes at least one polymerizing gas.

3. (Original) The method of claim 2, wherein the polymerizing etch gas is a single component polymerizing gas chosen from the group consisting of CF_4, C_2F_4, C_2F_6, C_3F_6, C_3F_8 and C_4F_8 and CHF_3.

4. (Original) The method of claim 2, wherein the polymerizing etch gas is a gas mixture comprising multiple components chosen from the group consisting of CF_4, C_2F_4, C_2F_6, C_3F_6, C_3F_8, C_4F_8, CHF_3, SF_6, Cl_2, H_2 and CCl_3F.

5. (Currently Amended) The method of ~~claims~~ claim 3 ~~or 4~~, wherein the transition region includes a doped silica core.

6. (Original) The method of claim 4, wherein the spacing between individual waveguides in the arrayed waveguide is smaller at the junction between the arrayed waveguide and the slab waveguide than away from the junction.

7-10. (Canceled)

11. (Currently Amended) A method of fabricating an optical device having closely spaced waveguides comprising:

etching a transition region with a reactive ion etch to form vertically tapered regions within an area between the closely spaced waveguides.

12. (New) The method of claim 4, wherein the transition region includes a doped silica core.

13. (New) A method of fabricating a phased array narrow band wavelength division multiplexer, comprising:

applying a photo resist to cover an optical layer in a pattern that defines a slab region and an array of adjacent waveguides extending from the slab region, wherein a distance separating each of the waveguides reduces along a transition region proximate the slab region; and

etching at least the transition region of the optical layer with a reactive ion etch, wherein the distance separating each of the waveguides along the transition region is selected to form vertically tapered regions connecting sides of two adjacent waveguides within the array of adjacent waveguides during the etching.

14. (New) The method of claim 13, wherein a height of each of the tapered regions proximate a junction with the slab is substantially the same as a height of each of the waveguides at the junction.

15. (New) The method of claim 13, wherein the reactive ion etch includes at least one polymerizing gas.

16. (New) The method of claim 15, wherein the polymerizing gas is a single component polymerizing gas chosen from the group consisting of CF_4, C_2F_4, C_2F_6, C_3F_6, C_3F_8 and C_4F_8 and CHF_3.

17. (New) The method of claim 15, wherein the polymerizing gas is a gas mixture comprising multiple components chosen from the group consisting of CF_4, C_2F_4, C_2F_6, C_3F_6, C_3F_8, C_4F_8, CHF_3, SF_6, Cl_2, H_2 and CCl_3F.

18. (New) A method of fabricating an optical device, comprising:

covering an optical layer with a photo resist in a pattern that defines an array of waveguides, wherein a selected distance separating each of the waveguides reduces along a transition region; and

etching at least the transition region of the optical layer with a reactive ion etch, wherein the etching forms vertically tapered regions connecting sides of two adjacent waveguides within the array of waveguides due to the selected distance separating each of the waveguides along the transition region.

19. (New) The method of claim 18, wherein a maximum height of the tapered region is substantially the same as a height of each of the waveguides.

20. (New) The method of claim 18, wherein the reactive ion etch includes at least one polymerizing gas.

21. (New) The method of claim 20, wherein the polymerizing gas is a single component polymerizing gas chosen from the group consisting of CF_4, C_2F_4, C_2F_6, C_3F_6, C_3F_8 and C_4F_8 and CHF_3.

22. (New) The method of claim 20, wherein the polymerizing gas is a gas mixture comprising multiple components chosen from the group consisting of CF_4, C_2F_4, C_2F_6, C_3F_6, C_3F_8, C_4F_8, CHF_3, SF_6, Cl_2, H_2 and CCl_3F.